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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

**PRELIMINARY AMENDMENT**

APPLICANT: Volkhard MAESS et al. CASE NO.: P99,0687-02  
SERIAL NO.: 09/864,053 EXAMINER:  
FILING DATE: May 23, 2001 ART UNIT: 2852  
INVENTION: "MODULAR ELECTROPHOTOGRAPHIC MULTICOLOR  
PRINTER"

Assistant Commissioner for Patents  
Washington D.C. 20231

SIR:

**IN THE SPECIFICATION**

Enclosed is a Substitute Specification that has been amended to place the International application into form for U.S. prosecution. Also enclosed is a marked up version of the specification showing the changes made to the original application which resulted in the substitute specification

**IN THE CLAIMS**

Cancel claims 1 -12 without prejudice.

Add new claims 15-30 as follows:

*Emdt A'* 15. An electrophotographic printer for printing a final image carrier,  
comprising:  
a transport system operable to transport the final image carrier;

a' **a first photoconductor and an additional photoconductor;**  
**a first print unit in contact with said first photoconductor and operable to**  
**produce a first toner image by a first arrangement of colored particles**  
**on said first photoconductor;**  
**at least one additional print unit in contact with said additional photoconductor**  
**to produce an additional toner image by an additional arrangement of**  
**colored particles on said additional photoconductor;**  
**a transfer apparatus operable to transfer the first toner image from said first**  
**photoconductor and the additional toner image from said additional**  
**photoconductor onto a surface segment on a front side of the final**  
**image carrier;**  
**a module having a first receptacle that receives said first print unit and having**  
**an additional receptacle that receives said additional print unit, said**  
**first receptacle and said additional receptacle being of substantially a**  
**same construction, said first print unit and said additional print unit**  
**being removably disposed in said module with few manual operations;**  
**at least one of the first toner image and the additional toner image containing**  
**at least one first image element of a first color and at least one**  
**additional image element of a further color; and**  
**a single fixing unit associated with the final image carrier to fix the toner**  
**images on at least one of a front surface and a back surface of the**  
**final image carrier.**

a' ~~116.~~ An electrophotographic printer as claimed in claim 15, wherein  
said transfer apparatus is a first transfer apparatus, and further comprising:  
a further photoconductor;  
at least one further print unit for production of a further toner image by a  
further arrangement of colored particles on said further  
photoconductor;  
a second transfer apparatus for transfer of the further toner image from said  
further photoconductor onto a surface segment on the back surface of  
the final image carrier; and  
a second module for receiving said at least one further print unit in a further  
receptacle.

~~117.~~ An electrophotographic printer as claimed in claim 16, wherein  
said further receptacle has essentially a same construction as said first  
receptacle and said additional receptacle,  
and said at least one further print unit being placed removably into said  
second module.

~~118.~~ An electrophotographic printer as claimed in claim 16, wherein  
said second transfer apparatus includes:  
an additional transfer unit allocated to the additional print unit which transfers  
the additional toner image directly from the additional photoconductor

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onto the surface segment on the back surface of the final image carrier.

5 19. An electrophotographic printer as claimed in claim 15, wherein said transfer apparatus includes:

a first transfer unit allocated to said first print unit which transfers the first toner image directly from said first photoconductor onto the surface segment on the front surface of the final image carrier; and

an additional transfer unit allocated to said at least one additional print unit which transfers the additional toner image directly from said additional photoconductor onto the surface segment on the front surface of the final image carrier.

6 20. An electrophotographic printer as claimed in claim 15, further comprising:

an intermediate carrier; and

an intermediate carrier transport apparatus to transport said intermediate carrier; and

wherein said transfer apparatus includes:

a first transfer unit allocated to said first print unit which transfers the first toner image from said first photoconductor onto a surface segment of said intermediate carrier; and

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a further transfer unit allocated to said additional print unit which transfers the additional toner image from said additional photoconductor onto the surface segment of the intermediate carrier;

wherein the intermediate carrier is transported past a transfer point near the front side of the final image carrier by said intermediate carrier transport means; and

wherein at the transfer point the toner images are transferred from said intermediate carrier onto the surface segment on the front surface of the final image carrier.

7 21. An electrophotographic printer as claimed in claim 15, further comprising:

a further photoconductor;

a second intermediate carrier;

at least one further print unit for production of a further toner image by a further arrangement of colored particles on said further photoconductor;

a second transfer unit for transfer of the further toner image from said further photoconductor onto a surface segment on the back surface of the final image carrier, said second transfer unit includes:

an additional transfer unit allocated to said at least one additional print unit which transfers the additional toner image from said

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additional photoconductor onto a surface segment of said  
second intermediate carrier; and

a second intermediate carrier transport assembly which transports said  
second intermediate carrier past a second transfer point near the back  
side of the final image carrier, at the second transfer point the  
additional toner image is transferred from said second intermediate  
carrier onto the surface segment on the back surface of the final image  
carrier.

✓ 22. An electrophotographic printer as claimed in claim 15, wherein at  
least one of the print units in the first module produces a third toner image  
before or after application of the first and of the additional toner image, said  
third toner image being transferred onto the surface segment on the front  
surface by the first transfer apparatus.

9 23. An electrophotographic printer as claimed in claim 22, wherein  
before or after application of the additional toner image, the additional print  
unit produces a toner image that is transferred onto the surface segment on  
the back surface by the second transfer apparatus.

10 24. An electrophotographic printer as claimed in claim 15, wherein  
before or after application of the additional toner image, the additional print

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unit produces a toner image that is transferred onto the back surface by the second transfer apparatus.

// ~~25~~. An electrophotographic printer as claimed in claim 15, wherein at least one of the print units include:

- a charge apparatus arranged near a photoconductor for production of an electrical charge of at least a part of the photoconductor;
- an exposure apparatus operable to provide a one-time exposure according to an image of the photoconductor per toner image;
- a first developer station for applying colored particles of a first color with a first polarity onto a first surface element of the photoconductor;
- a second developer station for the application of the colored particles of the second color with a second polarity onto a second surface element of the photoconductor;
- at least one total exposure unit for uniform exposure of the photoconductor;
- and
- at least one additional developer station for application of colored particles of an additional color with a second polarity onto an allocated additional surface element of the photoconductor.

<sup>12</sup>/~~26~~. An electrophotographic printer as claimed in claim 25, wherein the photoconductor includes an electrode layer that conducts a predetermined potential and a photoconductor layer arranged approximately parallel thereto.

a' <sup>13</sup> 27. An electrophotographic printer as claimed in claim 15, wherein at least one of the print units include:

a charge apparatus arranged near the photoconductor for production of an electrical charge of at least one part of the photoconductor;

an exposure apparatus for one-time exposure according to an image of the photoconductor per toner image;

a first developer station for application of colored particles of a first color with a selected polarity onto an allocated first surface element of the photoconductor;

at least one total exposure unit for uniform exposure of the photoconductor;  
and

at least one additional developer station for application of colored particles of a further color with the selected polarity onto a further surface element of the photoconductor.

<sup>14</sup> 28. An electrophotographic printer as claimed in claim 27, wherein the photoconductor includes an electrode layer that conducts a predetermined potential and a photoconductor layer arranged approximately parallel thereto.

<sup>15</sup> 29. An electrophotographic printer as claimed in claim 15, further comprising:

a print control unit which selects the colors of the toner from a color palette with a large number of predetermined colors;



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a developer station from one of the print units being allocated to each individual color of the color palette;   
the print control unit activating the developer stations for application of the selected colors; and   
at least one additional developer station being in an idle state during printing in which no colored particles are applied by the additional developer station.

14 30. An electrophotographic printer as claimed in claim 15, further comprising:   
at least one developer station which is placed removably into the print units.

#### IN THE ABSTRACT

Add the following new abstract:

#### ABSTRACT OF THE DISCLOSURE

A<sup>2</sup>   
A printer includes modular printing units held in receptacles, such as by a snap action retainer to permit easy removal and replacement. The printer units each include a photoconductor on which is produced a toner image and multiple printer units are provided in the printer. The photoconductor may either transfer the toner image of each printer unit to the final image carrier, or may transfer the toner image to an intermediate carrier which transfers the toner to the final image carrier. A transfer apparatus effects the transfer of the toner image from the photoconductor to final image

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carrier, or to the intermediate image carrier depending on the embodiment.

The printer units may provide layered toner of different colors on a single side of the final image carrier and may provide two sided printing of the final image carrier. A single toner fixing unit is provided to fix the toner to the final image carrier.